

# AMBASSADOR LECTURE SERIES STRENGTHENS ACADEMIC TIES





**A**T the heart of Lawrence Livermore's long history of outreach lies the University Relations and Science Education Office, which oversees a multitude of informative programs for everyone from kindergarteners to doctoral students. (See *S&TR*, September 2017, pp. 20–23.) Whereas the younger members of this audience benefit from improved scientific literacy and community commitment, university-targeted outreach directly enhances the Laboratory's employee pipeline and research collaborations. Annie Kersting, the office's director, states, "University relations increase the quality of our research while seeding the workforce. We want to inspire faculty to work with us and encourage their students to do the same."

Since its inception, Lawrence Livermore has been affiliated with the University of California (UC) system, which has served as both a managing entity for the Laboratory and an academic partner. A new program launched by University Relations—the Ambassador Lecture Series—seeks to increase the Laboratory's visibility at UC campuses and build connections with faculty and students. Patricia Falcone, Livermore's deputy director for Science and Technology (DDST), notes, "With this lecture series, the Laboratory is putting its best foot forward and offering an open invitation for collaboration. We benefit from greater visibility of the scientific areas in which we excel, and this program helps us tell the stories of our exciting research and talented staff."

Funded by DDST, a four-ambassador pilot program was launched in 2018, wherein scientific staff were nominated to give invited lectures at all 10 UC campuses (each ambassador visits at least three) showcasing some of Livermore's prominent research investments. This inaugural group of ambassadors included Frank Graziani, director of the High-Energy-Density Science Center; National Ignition Facility (NIF) physicist Tammy Ma; Michael Pivovarov, who leads the Laboratory's Space Science and Security Program; and Christopher Spadaccini, director of the Center for Engineered Materials and Manufacturing. Working with DDST communications manager Kevin Melissare, these distinguished individuals developed presentations on the Laboratory's work in modeling hot dense matter, ignition experiments, the search for dark matter, and additive manufacturing capabilities, respectively. "Our ambassadors are experienced, senior scientists with a broad viewpoint of their specialty's role in the Laboratory's mission," says Kersting. "We encourage academic engagement in these research areas."

In 2018, the Laboratory's Ambassador Lecture Series began as a pilot program with four scientists and has since expanded to include two more. Pictured here (left to right, standing) are ambassadors Frederick Streit, Christopher Spadaccini, and Frank Graziani. Annie Kersting (seated) is the director of Livermore's University Relations and Science Education Office, which spearheads the program. (Not pictured: Tammy Ma, Michael Pivovarov, and Benjamin Santer.) (Photo by Randy Wong.)

Thanks to enthusiastic responses from students and faculty across the UC system, the Ambassador Lecture Series was expanded in 2019 with the addition of two new ambassadors: climatologist and MacArthur Fellow Benjamin Santer and Frederick Streitz, director of the Laboratory's High Performance Computing Innovation Center.

### From Scholars to Scientists

Students may not intuitively understand a national laboratory's mission or application-driven programs, let alone consider starting a career at one. Likewise, universities do not offer majors in national security or stockpile stewardship and may not approach the application of scientific and technological breakthroughs to real-world problems. Sending scientists to speak to faculty and students is an important way to bridge this knowledge gap, potentially bringing new expertise and competencies to the Laboratory in highly specialized, rapidly evolving fields.

Livermore's lectures are aimed at academic departments, so undergraduates, graduate students, and faculty are all invited to attend. Each ambassador explains the Laboratory's role among Department of Energy (DOE) laboratories and how his or her subject matter relates to national security. The talks then delve into technical content before concluding with a summary of internship and postdoctoral opportunities. As an example, Spadaccini's presentation focuses on the Laboratory's advanced manufacturing capabilities with an overview of architected materials and new material structures. His talk incorporates videos of processes such as large-area projection microstereolithography and computed axial lithography. "Audiences include many graduate students, and the talks have to strike a balance of technical depth and breadth," states Spadaccini, whose presentations to UC engineering and materials science departments have drawn as many as 150 attendees.

Attendees also have the opportunity to meet the ambassadors while they are at a specific campus, either outside the lecture hall or during tours of laboratories or other departmental areas. "Attendees often wait to chat after the presentation, or they contact me later," says Spadaccini. "They want to know all about the Laboratory, and the conversations can become quite technical. Face-to-face interaction and seeing students in their laboratory environments strengthen our ties."

Physicist Tammy Ma, shown here during a presentation at UC San Diego, has explained the National Ignition Facility's scientific advancements to students and faculty at four UC campuses. (Photo by Mingsheng Wei.)

Ambassadors have visited all 10 University of California (UC) campuses, giving presentations to undergraduates, graduate students, and faculty.



### Valuable Connections

A key goal of the Ambassador Lecture Series is to expand Livermore and UC scientific communities beyond existing relationships. Kersting teamed up with June Yu, executive director of National Laboratories Programs at UC National Laboratories, a division of the UC Office of the President (UCOP), to implement the program. Altogether, UC's campuses educate more than 280,000 students on a \$36.5 billion annual operating budget. Each campus has its own research focus, collaboration potential, and growth trajectory. Yu, who coordinates the speaking invitations from university departments, says, "We are taking advantage of California's rich academic environment. All UC campuses conduct research relevant to DOE missions."

From the Laboratory's perspective, the connections made through the series help ensure that the best scientific and technological approaches underpin mission programs. Moreover, Ma says, "Livermore's amazing technical work is critical to our nation. Showcasing that aspect is important to knowledge sharing, to demonstrating that we are responsibly stewarding taxpayer money, and to engender support for our mission, as well as to inspire the next generation of scientists and engineers." The lecture series has also allowed Spadaccini to introduce Livermore's newly constructed Advanced Manufacturing Laboratory (AML). (See *S&TR*, March 2019, pp. 12–15.) He notes, "AML is an outward-facing facility with an industry and academic focus. We want UC to have a strong presence there. University partners routinely help us develop our capabilities."







Climatologist Benjamin Santer joined the lecture series in 2019, giving presentations that provide insight into climate modeling and Livermore's contributions to the Intergovernmental Panel on Climate Change's assessment reports.

For scientists, the lecture series introduces them to UC faculty whom they may not otherwise meet. "Ambassadors can build on their own research by collaborating with academic experts in their fields," states Kersting. Meeting students also opens up mentoring opportunities. Graziani adds, "I enjoy working with young people. Their energy level and enthusiasm for science are infectious. I get as excited as they do." Santer hopes to motivate students by sharing the joy of discovery and innovation, noting, "They come to realize science matters and they have a stake in the future. That some young researchers shift their focus to climate science is humbling."

The series also provides professors and students a glimpse of the Laboratory's unique position in advancing both basic science and national security. Attendees gain awareness of real-world applications relevant to California and to the United States. "UC is a significant player in the state's research goals, which overlap with some of Livermore's efforts," says Yu. Furthermore, visiting scientists can help fulfill academic needs beyond classroom instruction by introducing UC departments to large-scale scientific problems, experiments, and user facilities.

### Paying Dividends

One year into the program, both Livermore and UC describe the Ambassador Lecture Series as a win-win. Falcone, who has received feedback from representatives of UCOP and the Laboratory's Board of Governors, says, "The response to this new avenue of university-level engagement has been incredibly positive." Graziani notes, "UC faculty have been warm and welcoming, but the best part has been the students. They are eager to learn and enthusiastic."

Ambassadors hear from students interested in applying for internships, and they invite professors to give seminars at Livermore. For instance, Ma hosted UC Davis students for a day, arranging for a career panel and tours of NIF and other facilities.

She states, "The UC campuses I visit are incredibly dynamic and filled with enthusiastic students and supportive faculty. We share a common drive for innovation and excellence. Together, this lecture series and our other outreach efforts pay dividends down the road."

For evidence of this enduring effect, one need look no further than the ambassadors. Ma was motivated to study physics after attending the Laboratory's Science on Saturday lecture program.

She earned her Ph.D. at UC San Diego and is now the associate program leader for High-Energy-Density Laboratory Physics. Graziani interned at NASA, SLAC National Laboratory, and Fermi National Accelerator Laboratory. He states, "The students we reach out to are future leaders of the national laboratories. I owe my successful career to the many patient mentors I had as a student and postdoc."

Now no longer a trial program, the Ambassador Lecture Series will continue to grow through the addition of speakers and topics, including those that span multiple academic departments. "Future lectures will cover fertile research areas where Livermore and UC overlap. Moving forward, we encourage ambassadors to

connect with other colleges and universities," explains Kersting, noting Ma's recent invitation to visit Sacramento State University. Santer, who regularly speaks to campuses across the country, affirms, "A lecture is like a stone thrown into a pond. This simple act can produce positive results we may not be able to foresee."

—Holly Auten

**Key Words:** additive manufacturing, Advanced Manufacturing Laboratory (AML), Ambassador Lecture Series, climate science, high-energy-density science, National Ignition Facility (NIF), national security, outreach, Space Science and Security Program, University of California (UC).

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